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Russian Icons: Improving the Energy Efficiency and Sustainability of a Local Museum

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Russian Icons: Improving the Energy Efficiency and Sustainability of a Local Museum

Megan Bredes, Luis Vinke, Elliott Wiegman, David Wians, Jessica Ma

Abstract

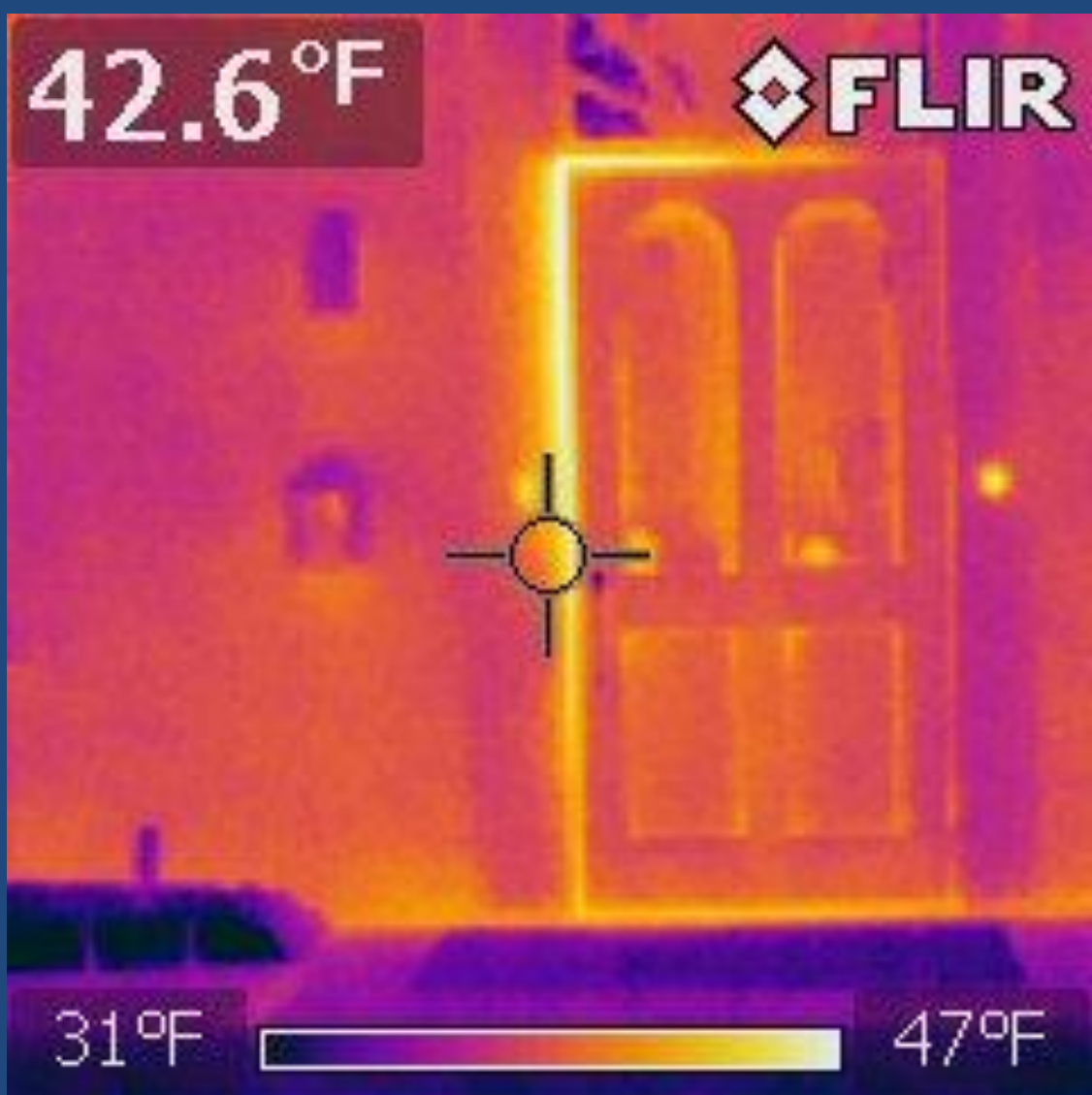
The Museum of Russian Icons requested a green assessment of the museum and recommendations on how they could improve the sustainability of the museum. Our approach to this problem was to perform an energy audit on their building. After performing the energy audit we were able to confirm that the museum already had a number of green technologies implemented, but there was still room for improvement.

Project Statement

The goal of this project was to assess the Museum of Russian Icons for its sustainability and energy efficiency and to make suggestions on how to improve the efficiency of the museum.

Methodology

Research	• Detailed background research
Discovery	• Tour Museum • Interview David Durrant, Sarah Brophy, Tara Young, Steven Strong, Bruce Barton, and Geoff Arthur
Audit	• Use an energy audit checklist to analyze the museum • Collect data using environmental test instruments
Critiques	• Review the audit data information
Suggestions	• Develop recommendations based on of the energy audit results



Thermal image of the front door of the Museum, showing heat loss.



Front of the museum in visual spectrum

*"You must be the change you wish to see in the world."
- Mohandas Ghandi*



Photovoltaic Panel Inverters



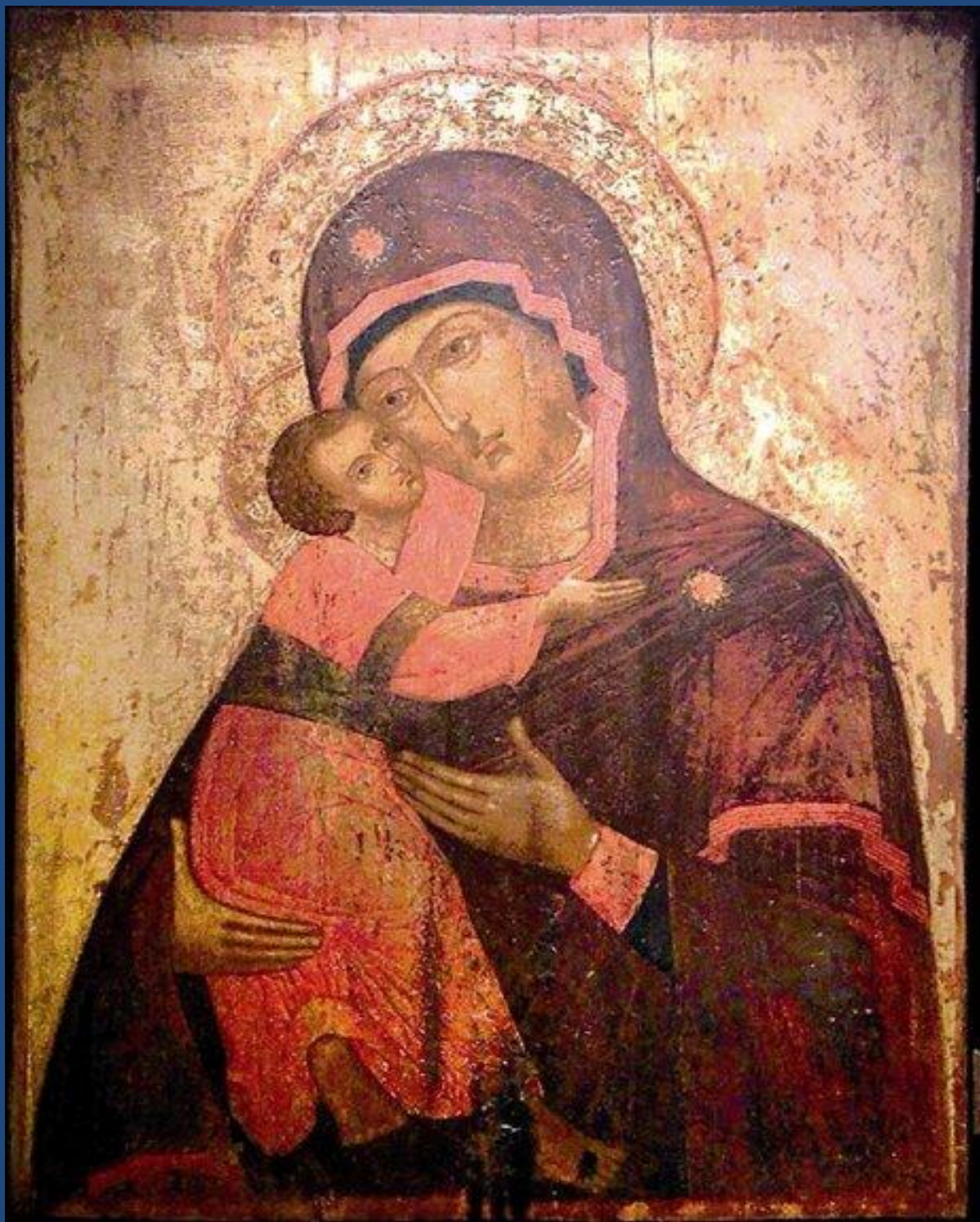
Inverter showing amount of CO₂ saved by one module



Inverter showing how much energy was produced by one module

Results and Recommendations

Categories	Results	Recommendations
Lighting	75% LED lighting. Some excessive lighting.	Remove select light bulbs to decrease light intensity and save energy.
Heating/Cooling	Well Insulated. Central heating system. Temp maintained at 68-72°F.	Due to the sensitivity of the art, heating and cooling procedures cannot be changed.
Photovoltaics	44 photovoltaic panels on roof. 30-31 kilowatts electrical energy generated.	Suggest joint venture with neighboring building to install more photovoltaics. Set up info display panel showing the electrical output of photovoltaics for visitors.
Green Roof	500 square foot green roof. More aesthetic than functional. Reduces the temperature and runoff.	Replace plants. Put informative panel on terrace area explaining how green roofs are beneficial and sustainable.
Recycling	The employees only recycle paper and cardboard.	Recycling stations should be implemented in both the office and the café to recycle more kinds of materials. Educational material should be developed for employees and informative signs posted for visitors.



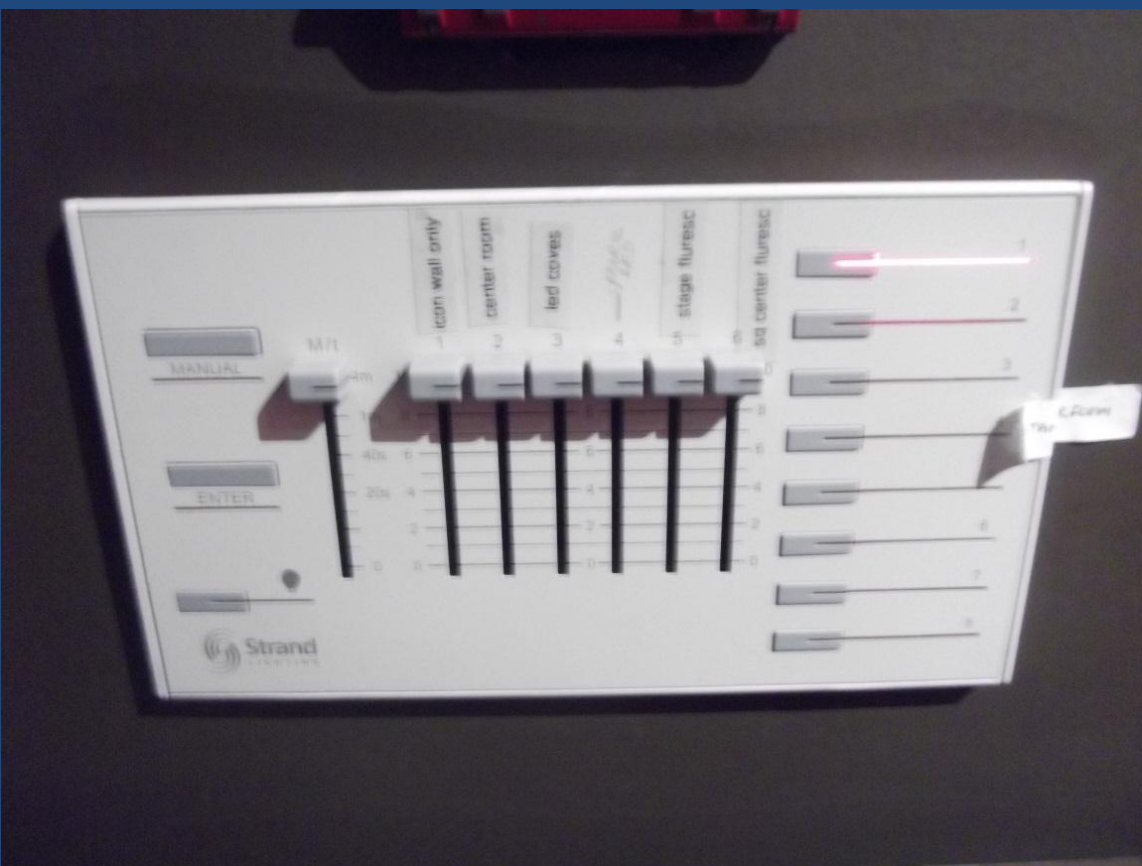
Russian Icon
(<http://thewayofbeauty.org/2010/05/370/>)



Russian Icon

Conclusion

By performing an energy audit, we confirmed that the Museum of Russian Icons is very energy efficient. By following our recommendations the museum can improve their sustainability and conserve energy. With our suggestions the museum will also be able to spread the green initiative.



Lighting Control System



Photo-voltaic Panels on roof.
(http://www.solar design.com/projects/project_display.php?id=47)

The Big Picture

We have determined that the Museum of Russian Icons is a highly green building. Now it is important for the museum to let people know about their green initiatives and the importance of sustainability. The Museum of Russian Icons is a role model for the Clinton community and small museums wishing to go green.



Main gallery (second floor) of museum (Picture from Flickr.com)



Back of the museum solar panels visible on roof